TB-FMCL-USB30
Hardware User Manual

Rev.0.91

Preliminary

Revision History

Version	Date	Description	Publisher
Rev.0.91	2012/02/07	Preliminary version	Yoshioka

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Introduction

Thank you for purchasing the **TB-FMCL-USB30** board. Before using the product, be sure to carefully read this user manual and fully understand how to correctly use the product. First read through this manual, then always keep it handy.

SAFETY PRECAUTIONS

Be sure to observe these precautions

Observe the precautions listed below to prevent injuries to you or other personnel or damage to property.

- **Before using the product, read these safety precautions carefully to assure correct use.**
- **These precautions contain serious safety instructions that must be observed.**
- **After reading through this manual, be sure to always keep it handy.**

The following conventions are used to indicate the possibility of injury/damage and classify precautions if the product is handled incorrectly.

Danger	Indicates the high possibility of serious injury or death if the product is handled incorrectly.
Warning	Indicates the possibility of serious injury or death if the product is handled incorrectly.
Caution	Indicates the possibility of injury or physical damage in connection with houses or household goods if the product is handled incorrectly.

The following graphical symbols are used to indicate and classify precautions in this manual.
(Examples)

	Turn off the power switch.
	Do not disassemble the product.
	Do not attempt this.

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Warning	
	In the event of a failure, disconnect the power supply. If the product is used as is, a fire or electric shock may occur. Disconnect the power supply immediately and contact our sales personnel for repair.
	If an unpleasant smell or smoking occurs, disconnect the power supply. If the product is used as is, a fire or electric shock may occur. Disconnect the power supply immediately. After verifying that no smoking is observed, contact our sales personnel for repair.
	Do not disassemble, repair or modify the product. Otherwise, a fire or electric shock may occur due to a short circuit or heat generation. For inspection, modification or repair, contact our sales personnel.
	Do not touch a cooling fan. As a cooling fan rotates in high speed, do not put your hand close to it. Otherwise, it may cause injury to persons. Never touch a rotating cooling fan.
	Do not place the product on unstable locations. Otherwise, it may drop or fall, resulting in injury to persons or failure.
	If the product is dropped or damaged, do not use it as is. Otherwise, a fire or electric shock may occur.
	Do not touch the product with a metallic object. Otherwise, a fire or electric shock may occur.
	Do not place the product in dusty or humid locations or where water may splash. Otherwise, a fire or electric shock may occur.
	Do not get the product wet or touch it with a wet hand. Otherwise, the product may break down or it may cause a fire, smoking or electric shock.
	Do not touch a connector on the product (gold-plated portion). Otherwise, the surface of a connector may be contaminated with sweat or skin oil, resulting in contact failure of a connector or it may cause a malfunction, fire or electric shock due to static electricity.

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Caution	
	Do not use or place the product in the following locations. • Humid and dusty locations • Airless locations such as closet or bookshelf • Locations which receive oily smoke or steam • Locations exposed to direct sunlight • Locations close to heating equipment • Closed inside of a car where the temperature becomes high • Staticky locations • Locations close to water or chemicals Otherwise, a fire, electric shock, accident or deformation may occur due to a short circuit or heat generation.
	Do not place heavy things on the product. Otherwise, the product may be damaged.

■ Disclaimer

This product is a board intended for **USB3.0 interface** function. Tokyo Electron Device Limited assumes no responsibility for any damages resulting from the use of this product for purposes other than those stated.

Even if the product is used properly, Tokyo Electron Device Limited assumes no responsibility for any damages caused by:

(1) Earthquake, thunder, natural disaster or fire resulting from the use beyond our responsibility, acts by a third party or other accidents, the customer's willful or accidental misuse or use under other abnormal conditions.
(2) Secondary impact arising from use of this product or its unusable state (business interruption or others)
(3) Use of this product against the instructions given in this manual.
(4) Malfunctions due to connection to other devices.

Tokyo Electron Device Limited assumes no responsibility or liability for:

(1) Erasure or corruption of data arising from use of this product.
(2) Any consequences or other abnormalities arising from use of this product, or
(3) Damage of this product not due to our responsibility or failure due to modification

This product has been developed by assuming its use for research, testing or evaluation. It is not authorized for use in any system or application that requires high reliability.

Repair of this product is carried out by replacing it on a chargeable basis, not repairing the faulty devices. However, non-chargeable replacement is offered for initial failure if such notification is received within two weeks after delivery of the product.

The specification of this product is subject to change without prior notice.

The product is subject to discontinuation without prior notice.

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1. Related Documents and Accessories

Related documents:

All documents relating to this board can be downloaded from our website. Please see attached paper on the products.

Board accessories:

- FMC spacer set

2. Overview

TB-FMCL-USB30 is supporting USB Super Speed Peripheral by Cypress CYUSB3014 device.
It has a USB3.0 Type-B connector and FMC Low pin count for FPGA evaluation boards.
Notice: This board is not administered certification test of USB logo.

3. Feature

USB Super Speed Peripheral device: Cypress, CYUSB3014
FMC: SAMTEC, ASP-134604-01
USB 3.0 TYPE-B Connector: SMATEC, USB3-B-S-S-TH
JTAG for CYUSB3014: 3M, N2520-6002-RB
SPI Flash for CYUSB3014: STMicro, M25P128
RS-232 Transceiver: MAXIM, MAX3232ECAE

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4. Block Diagram

Following Figure shows a block diagram of TB-FMCL-USB30.

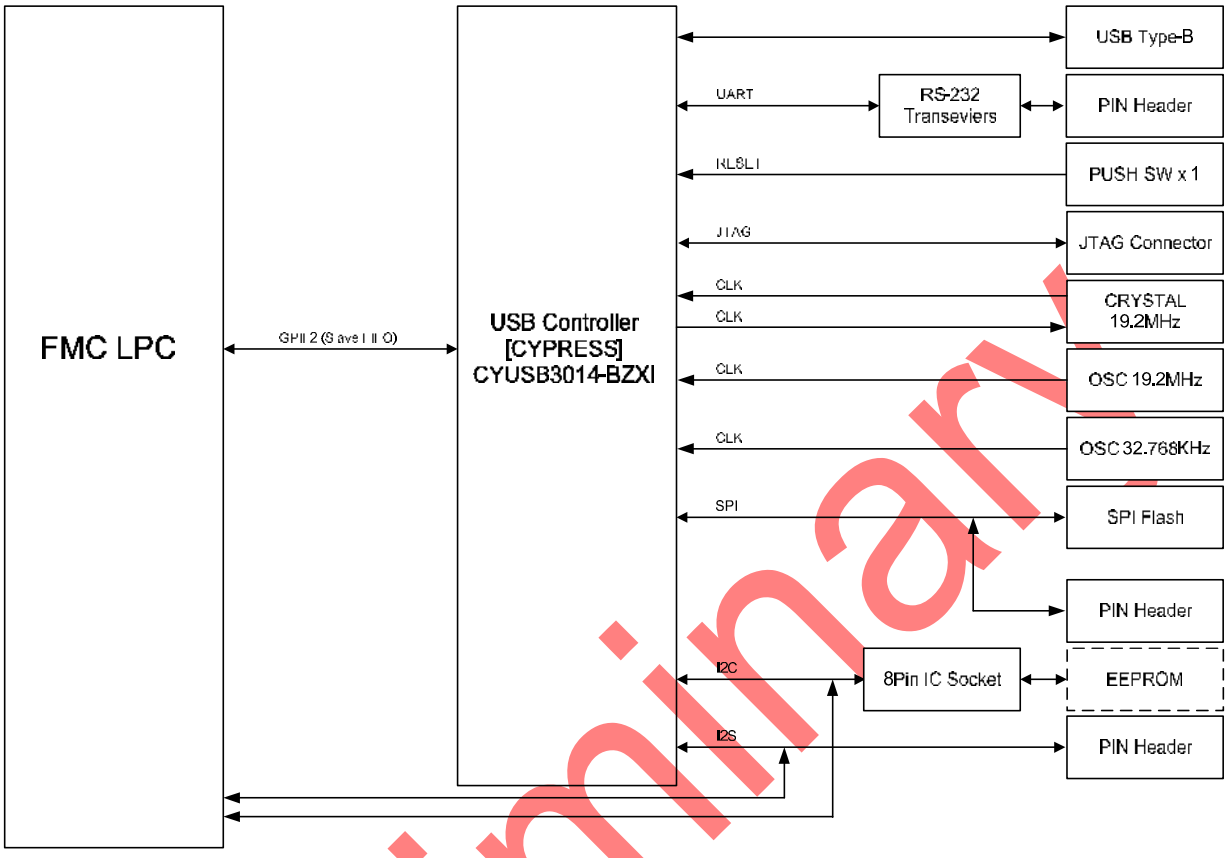

Figure 4-1 Block Diagram

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5. External View of the Board

Following Figures show external view of the board.

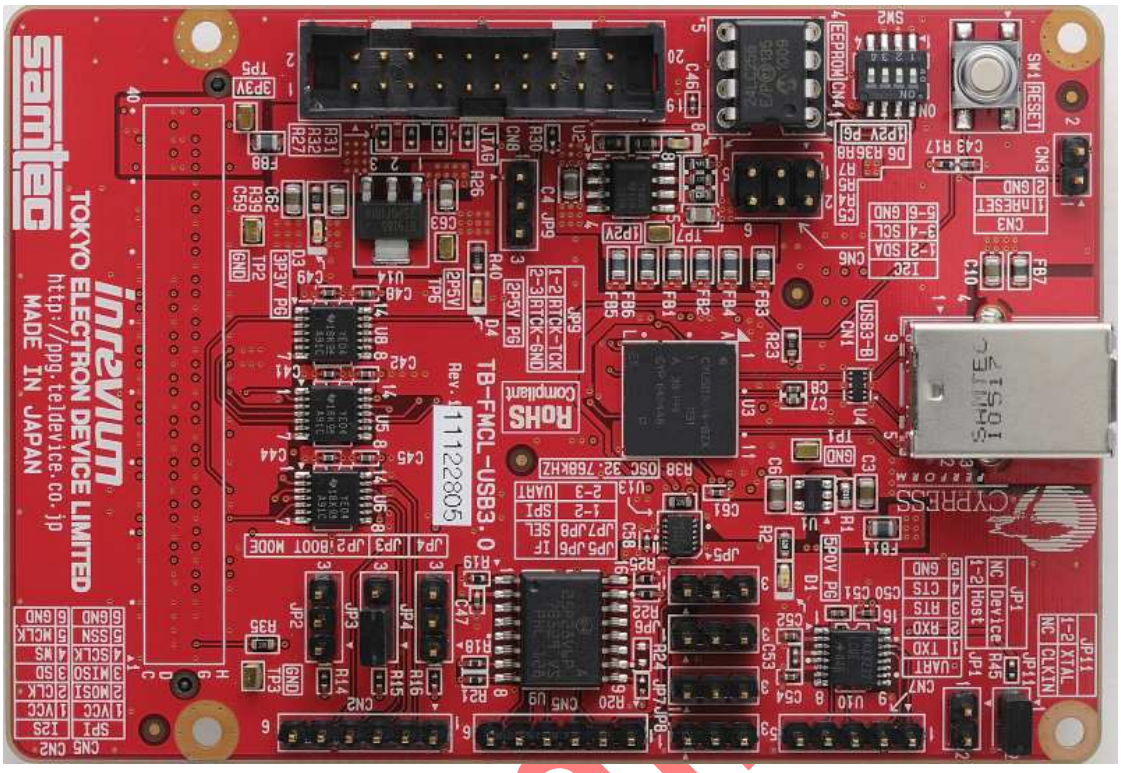

Figure 5-1 Component Side

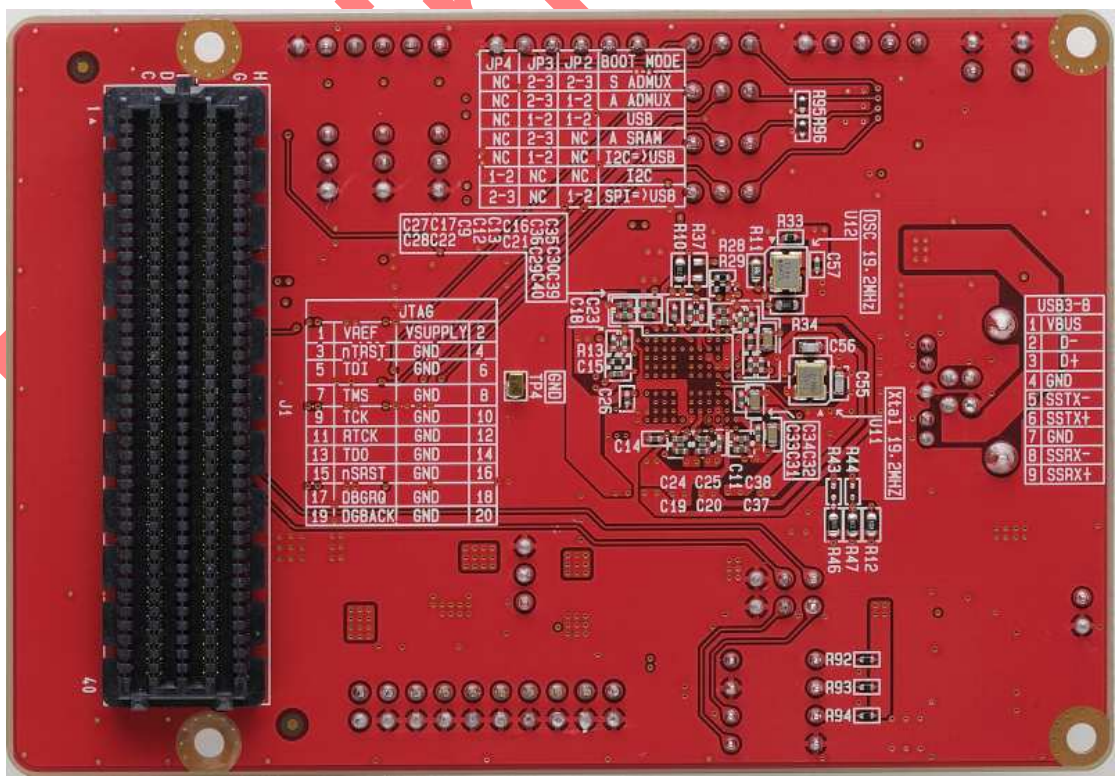

Figure 5-2 Solder Side

6. Board Specifications

Figure 6-1 shows the board specifications.

External Dimensions: 130.0 mm (W) x 69.0 mm (H)
Number of Layers: 8 layers
Board Thickness: 1.6 mm
Material: FR-4

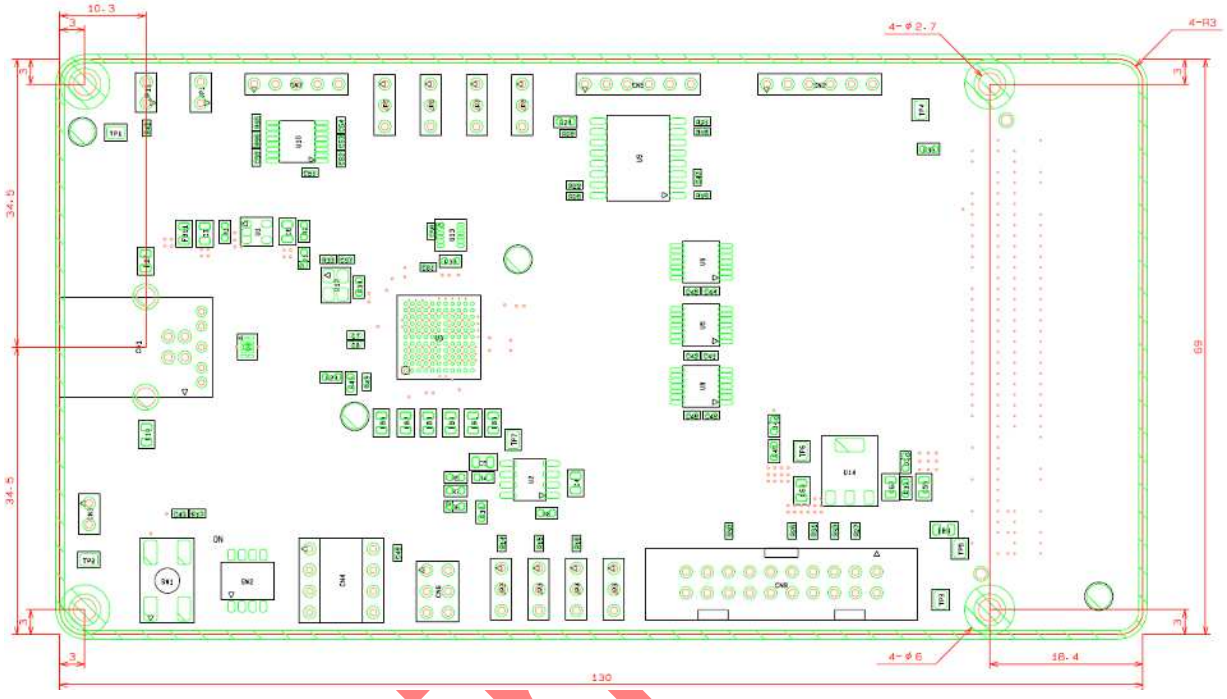

Figure 6-1 Board Dimensions

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7. Description of Components

7.1. Power supply

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7.2. USB3.0 TYPE-B connector (CN1)

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7.3. I2S Pin Header (CN2)

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7.4. EEPROM Socket (CN4)

T.B.D

7.5. SPI Pin Header (CN5)

T.B.D

7.6. I2C Pin Header (CN6)

T.B.D

7.7. RS-232 Pin Header (CN7)

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7.8. JATG Connector (CN8)

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7.9. FMC connector

TB-FMCL-USB30 has a FMC Low pin count connector.

Following figure is FMC Standard pin assign. Low pin count is using column H, G, D and C.

	K	J	H	G	F	E	D	C	B	A
1	VREF_B_M2C	GND	VREF_A_M2C	GND	PG_M2C	GND	PG_C2M	GND	RES1	GND
2	GND	CLK3_M2C_P	PRSNT_M2C_L	CLK1_M2C_P	GND	HA01_P_CC	GND	DP0_C2M_P	GND	DP1_M2C_P
3	GND	CLK3_M2C_N	GND	CLK1_M2C_N	GND	HA01_N_CC	GND	DP0_C2M_N	GND	DP1_M2C_N
4	CLK2_M2C_P	GND	CLK0_M2C_P	GND	HA00_P_CC	GND	GBTCLK0_M2C_P	GND	DP9_M2C_P	GND
5	CLK2_M2C_N	GND	CLK0_M2C_N	GND	HA00_N_CC	GND	GBTCLK0_M2C_N	GND	DP9_M2C_N	GND
6	GND	HA03_P	GND	LA00_P_CC	GND	HA05_P	GND	DP0_M2C_P	GND	DP2_M2C_P
7	HA02_P	HA03_N	LA02_P	LA00_N_CC	HA04_P	HA05_N	GND	DP0_M2C_N	GND	DP2_M2C_N
8	HA02_N	GND	LA02_N	GND	HA04_N	GND	LA01_P_CC	GND	DP8_M2C_P	GND
9	GND	HA07_P	GND	LA03_P	GND	HA09_P	LA01_N_CC	GND	DP8_M2C_N	GND
10	HA06_P	HA07_N	LA04_P	LA03_N	HA08_P	HA09_N	GND	LA06_P	GND	DP3_M2C_P
11	HA06_N	GND	LA04_N	GND	HA08_N	GND	LA05_P	LA06_N	GND	DP3_M2C_N
12	GND	HA11_P	GND	LA08_P	GND	HA13_P	LA05_N	GND	DP7_M2C_P	GND
13	HA10_P	HA11_N	LA07_P	LA08_N	HA12_P	HA13_N	GND	GND	DP7_M2C_N	GND
14	HA10_N	GND	LA07_N	GND	HA12_N	GND	LA09_P	LA10_P	GND	DP4_M2C_P
15	GND	HA14_P	GND	LA12_P	GND	HA16_P	LA09_N	LA10_N	GND	DP4_M2C_N
16	HA17_P_CC	HA14_N	LA11_P	LA12_N	HA15_P	HA16_N	GND	GND	DP6_M2C_P	GND
17	HA17_N_CC	GND	LA11_N	GND	HA15_N	GND	LA13_P	GND	DP6_M2C_N	GND
18	GND	HA18_P	GND	LA16_P	GND	HA20_P	LA13_N	LA14_P	GND	DP5_M2C_P
19	HA21_P	HA18_N	LA15_P	LA16_N	HA19_P	HA20_N	GND	LA14_N	GND	DP5_M2C_N
20	HA21_N	GND	LA15_N	GND	HA19_N	GND	LA17_P_CC	GND	GBTCLK1_M2C_P	GND
21	GND	HA22_P	GND	LA20_P	GND	HB03_P	LA17_N_CC	GND	GBTCLK1_M2C_N	GND
22	HA23_P	HA22_N	LA19_P	LA20_N	HB02_P	HB03_N	GND	LA18_P_CC	GND	DP1_C2M_P
23	HA23_N	GND	LA19_N	GND	HB02_N	GND	LA23_P	LA18_N_CC	GND	DP1_C2M_N
24	GND	HB01_P	GND	LA22_P	GND	HB05_P	LA23_N	GND	DP9_C2M_P	GND
25	HB00_P_CC	HB01_N	LA21_P	LA22_N	HB04_P	HB05_N	GND	GND	DP9_C2M_N	GND
26	HB00_N_CC	GND	LA21_N	GND	HB04_N	GND	LA26_P	LA27_P	GND	DP2_C2M_P
27	GND	HB07_P	GND	LA25_P	GND	HB09_P	LA26_N	LA27_N	GND	DP2_C2M_N
28	HB06_P_CC	HB07_N	LA24_P	LA25_N	HB08_P	HB09_N	GND	GND	DP8_C2M_P	GND
29	HB06_N_CC	GND	LA24_N	GND	HB08_N	GND	TCK	GND	DP8_C2M_N	GND
30	GND	HB11_P	GND	LA29_P	GND	HB13_P	TDI	SCL	GND	DP3_C2M_P
31	HB10_P	HB11_N	LA28_P	LA29_N	HB12_P	HB13_N	TDO	SDA	GND	DP3_C2M_N
32	HB10_N	GND	LA28_N	GND	HB12_N	GND	3P3VAUX	GND	DP7_C2M_P	GND
33	GND	HB15_P	GND	LA31_P	GND	HB19_P	TMS	GND	DP7_C2M_N	GND
34	HB14_P	HB15_N	LA30_P	LA31_N	HB16_P	HB19_N	TRST_L	GA0	GND	DP4_C2M_P
35	HB14_N	GND	LA30_N	GND	HB16_N	GND	GA1	12P0V	GND	DP4_C2M_N
36	GND	HB18_P	GND	LA33_P	GND	HB21_P	3P3V	GND	DP6_C2M_P	GND
37	HB17_P_CC	HB18_N	LA32_P	LA33_N	HB20_P	HB21_N	GND	12P0V	DP6_C2M_N	GND
38	HB17_N_CC	GND	LA32_N	GND	HB20_N	GND	3P3V	GND	GND	DP5_C2M_P
39	GND	VIO_B_M2C	GND	VADJ	GND	VADJ	GND	3P3V	GND	DP5_C2M_N
40	VIO_B_M2C	GND	VADJ	GND	VADJ	GND	3P3V	GND	RES0	GND
			LPC Connector	LPC Connector			LPC Connector	LPC Connector		

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8. Default Switch Settings

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